

**TYPICAL SECTION**  
NTS

NOTES:

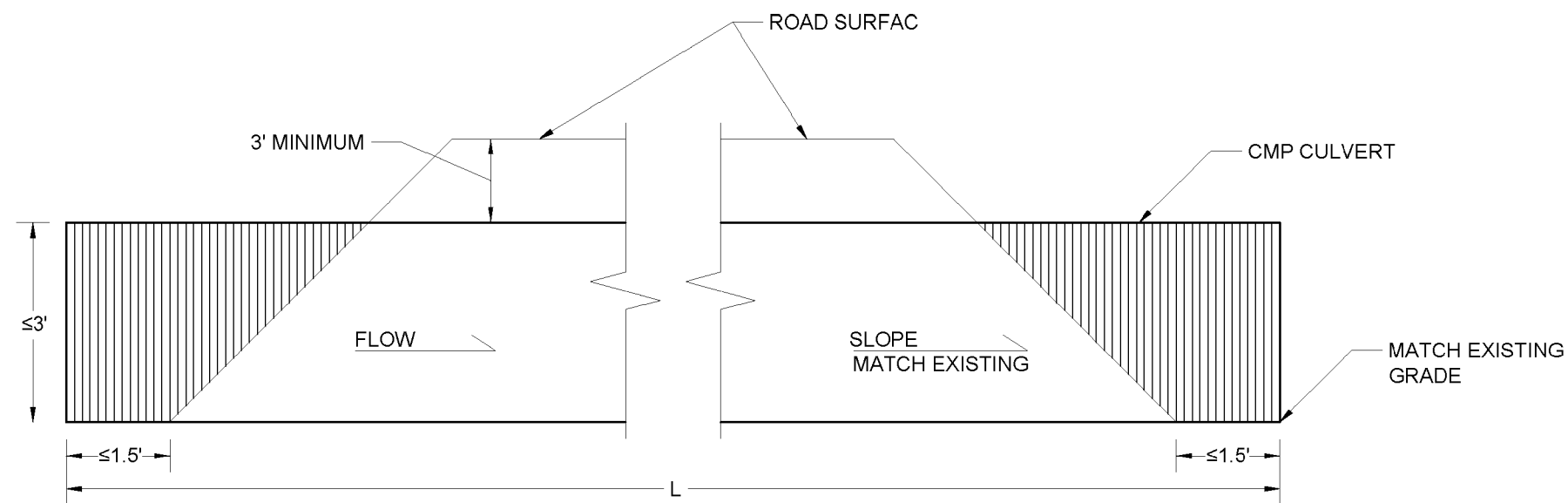
CATEGORY 1 CULVERTS SHALL BE INSTALLED AS NEEDED DURING ROAD CONSTRUCTION FOR CROSS DRAINAGE. CULVERTS SHALL NOT BE USED ON MAPPED STREAMS.

CULVERTS SHALL SPAN ENTIRE TOE OF FILL WIDTH PLUS ONE HALF CULVERT DIAMETER BEYOND TOE OF FILL.

DIAMETER SHALL BE UP TO 3'.

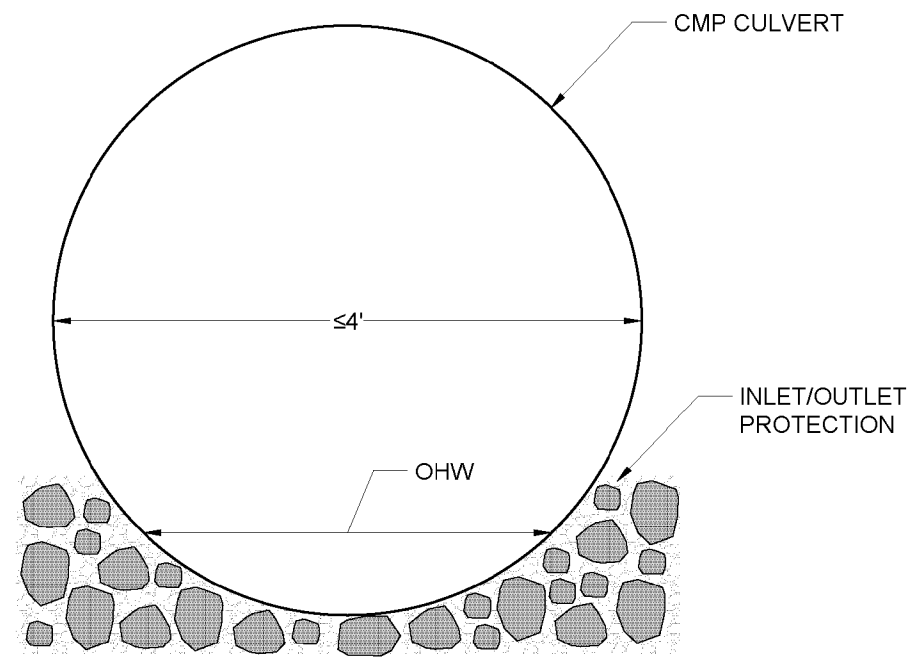
FILL DEPTH WILL BE DETERMINED BASED ON EQUIPMENT LOADING AND CMP DESIGN.

FINAL DESIGN OF FISH PASSAGE CULVERTS WILL BE IN ACCORDANCE WITH USFWS GUIDELINES – CULVERT DESIGN GUIDELINES FOR ECOLOGICAL FUNCTION, USFWS ALASKA FISH PASSGE PROGRAM REVISION 5 (FEB 5, 2020).

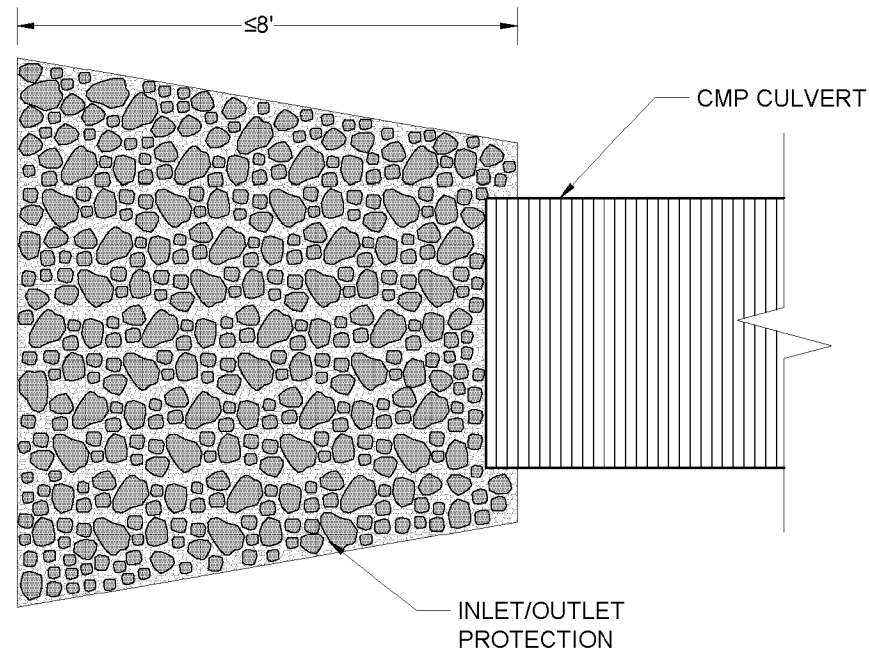


**TYPICAL PROFILE**  
NTS

<b>PEBBLE PROJECT</b>		<b>DRAWING TITLE:</b> <b>CULVERT DESIGN</b> <b>CATEGORY 1</b>	
APPLICANT: <b>PEBBLE LIMITED PARTNERSHIP</b>			
LAT., LONG. OF MINE 59°53'51.29"N 155°18'2.83"W	PROPOSED ACTIVITY: <b>MINERAL DEVELOPMENT</b>		
WATERWAY: VARIOUS	FILE NO. <b>POA-2017-271</b>	DATE: <b>JUNE 2020</b>	FIGURE NO. <b>CX-001</b>



**TYPICAL SECTION**  
NTS



**TYPICAL INLET/OUTLET PROTECTION**  
NTS

**NOTES:**

CATEGORY 2 CULVERTS SHALL BE INSTALLED ON MAPPED STREAMS THAT HAVE A STREAM WIDTH OF UP TO 2' AT THE ORDINARY HIGH WATER (OHW) MARK.

CULVERTS SHALL SPAN ENTIRE TOE OF FILL WIDTH PLUS ONE HALF CULVERT DIAMETER BEYOND TOE OF FILL.

DIAMETER SHALL BE UP TO 4'.

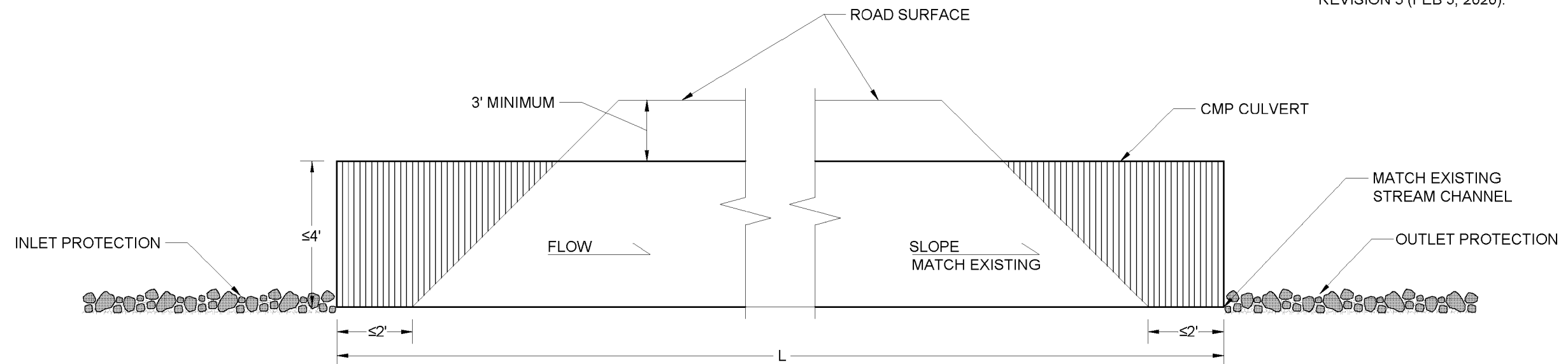
STREAM IMPACT AREA EQUALS STREAM WIDTH TIMES CULVERT LENGTH PLUS THE AREA ASSOCIATED WITH INLET/OUTLET PROTECTION.

STREAM BED SLOPE THROUGH CULVERT SHALL MATCH STREAM SLOPE TO MAXIMUM EXTENT PRACTICABLE.

FILL DEPTH WILL BE DETERMINED BASED ON EQUIPMENT LOADING AND CMP DESIGN.

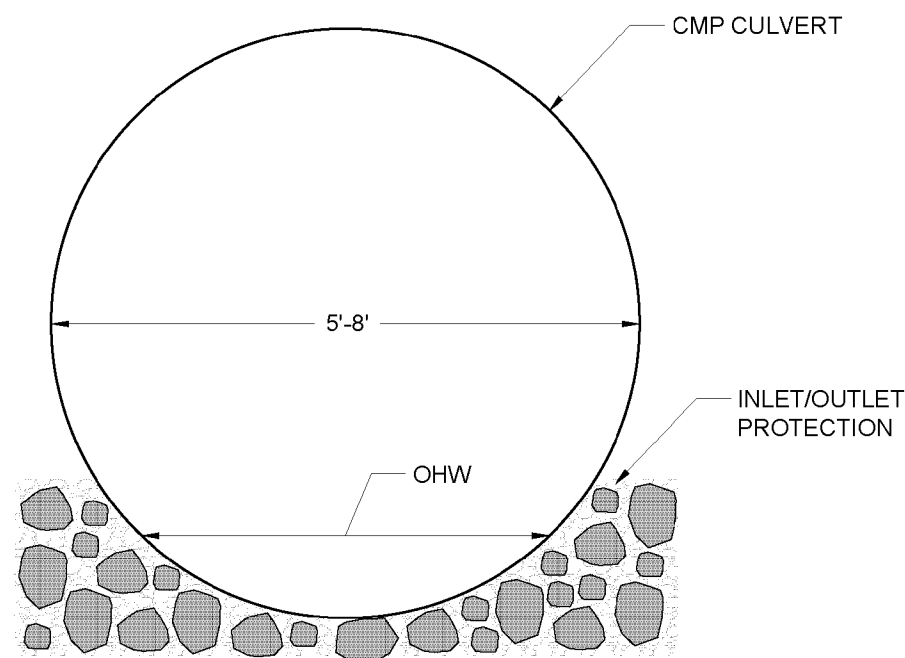
INLET/OUTLET PROTECTION SHALL BE CONSTRUCTED PER ALASKA DOT HIGHWAY DRAINAGE MANUAL.

FINAL DESIGN OF FISH PASSAGE CULVERTS WILL BE IN ACCORDANCE WITH USFWS GUIDELINES – CULVERT DESIGN GUIDELINES FOR ECOLOGICAL FUNCTION, USFWS ALASKA FISH PASSGE PROGRAM REVISION 5 (FEB 5, 2020).

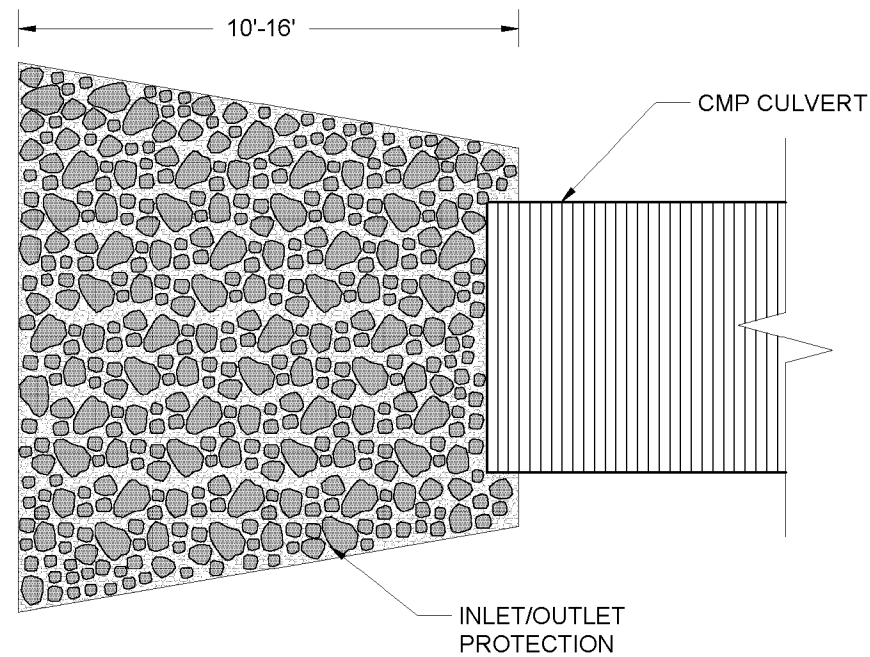


**TYPICAL PROFILE**  
NTS

<b>PEBBLE PROJECT</b>		<b>DRAWING TITLE:</b> <b>CULVERT DESIGN</b> <b>CATEGORY 2</b>	
APPLICANT: <b>PEBBLE LIMITED PARTNERSHIP</b>			
LAT., LONG. OF MINE 59°53'51.29"N 155°18'2.83"W	PROPOSED ACTIVITY: <b>MINERAL DEVELOPMENT</b>		
WATERWAYS: VARIOUS	FILE NO. <b>POA-2017-271</b>		
		DATE: <b>JUNE 2020</b>	FIGURE NO. <b>CX-002</b>



**TYPICAL SECTION**  
NTS



**TYPICAL INLET/OUTLET PROTECTION**  
NTS

**NOTES:**

CATEGORY 3 CULVERTS SHALL BE INSTALLED ON MAPPED STREAMS THAT HAVE A STREAM WIDTH GREATER THAN 2' TO 6' AT THE ORDINARY WATER (OHW) MARK.

CULVERTS SHALL SPAN ENTIRE TOE OF FILL WIDTH PLUS ONE HALF CULVERT DIAMETER BEYOND TOE OF FILL.

DIAMETER SHALL BE 5' - 8'.

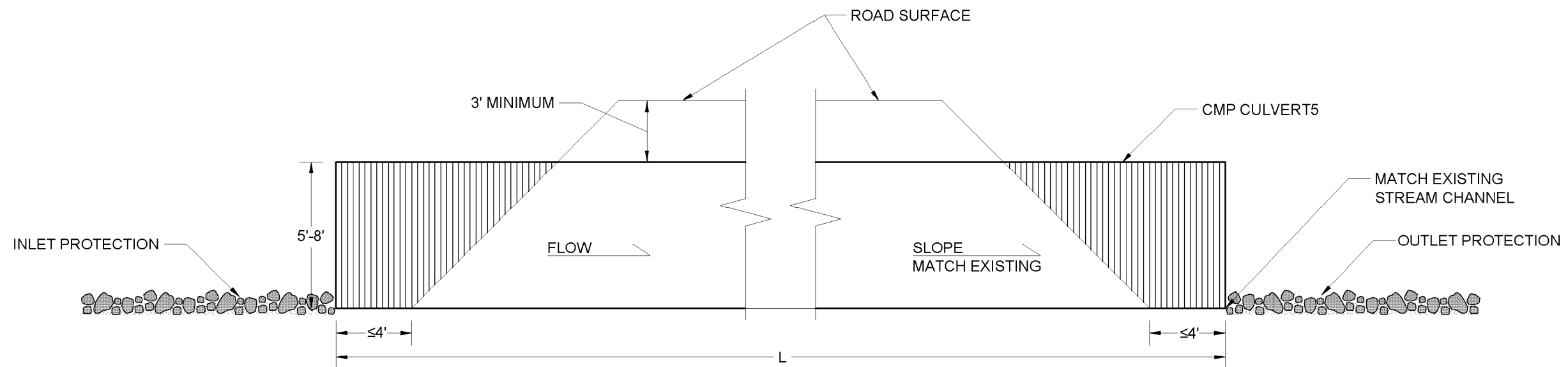
STREAM IMPACT AREA EQUALS STREAM WIDTH TIMES CULVERT LENGTH PLUS THE AREA ASSOCIATED WITH INLET/OUTLET PROTECTION.

STREAM BED SLOPE THROUGH CULVERT SHALL MATCH STREAM SLOPE TO MAXIMUM EXTENT PRACTICABLE.

FILL DEPTH WILL BE DETERMINED BASED ON EQUIPMENT LOADING AND CMP DESIGN.

INLET/OUTLET PROTECTION SHALL BE CONSTRUCTED PER ALASKA DOT HIGHWAY DRAINAGE MANUAL.

FINAL DESIGN OF FISH PASSAGE CULVERTS WILL BE IN ACCORDANCE WITH USFWS GUIDELINES – CULVERT DESIGN GUIDELINES FOR ECOLOGICAL FUNCTION, USFWS ALASKA FISH PASSGE PROGRAM REVISION 5 (FEB 5, 2020).



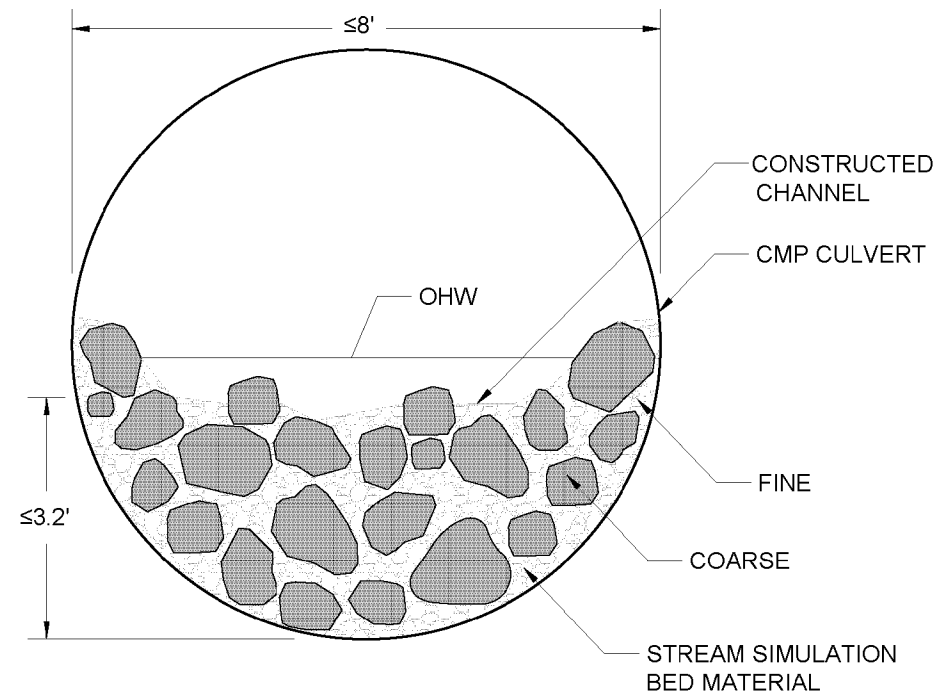
**TYPICAL PROFILE**  
NTS

<b>PEBBLE PROJECT</b>		<b>DRAWING TITLE:</b> <b>CULVERT DESIGN</b> <b>CATEGORY 3</b>	
APPLICANT: <b>PEBBLE LIMITED PARTNERSHIP</b>			
LAT., LONG. OF MINE 59°53'51.29"N 155°18'2.83"W	PROPOSED ACTIVITY: <b>MINERAL DEVELOPMENT</b>		
WATERWAY: VARIOUS	FILE NO. <b>POA-2017-271</b>		
		DATE: <b>JUNE 2020</b>	FIGURE NO. <b>CX-003</b>

NOTES:

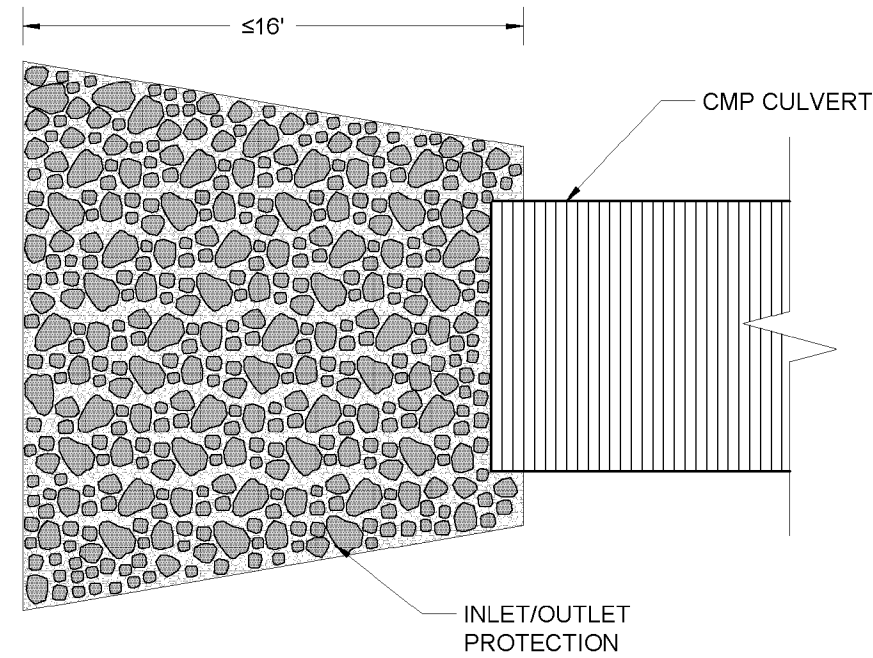
**CATEGORY 4 CULVERTS SHALL BE INSTALLED IN MAPPED STREAMS WHERE FISH PASSAGE IS REQUIRED AND THAT HAVE A STREAM WIDTH UP TO 6' AT THE ORDINARY HIGH WATER (OHW) MARK.**

FINAL DESIGN OF FISH PASSAGE CULVERTS WILL BE IN ACCORDANCE WITH USFWS GUIDELINES – CULVERT DESIGN GUIDELINES FOR ECOLOGICAL FUNCTION, USFWS ALASKA FISH PASSGE PROGRAM REVISION 5 (FEB 5, 2020).



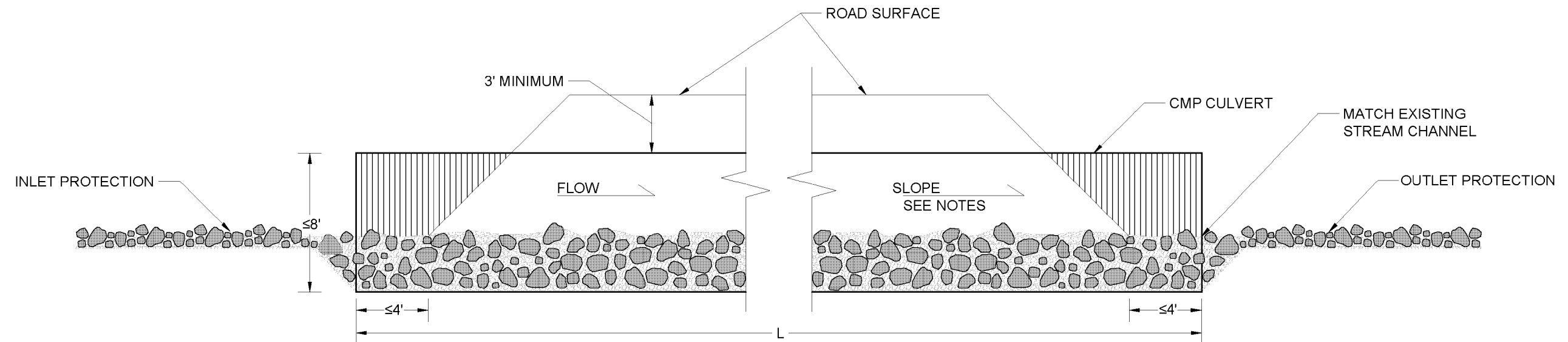
**TYPICAL SECTION**

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**TYPICAL INLET/OUTLET PROTECTION**

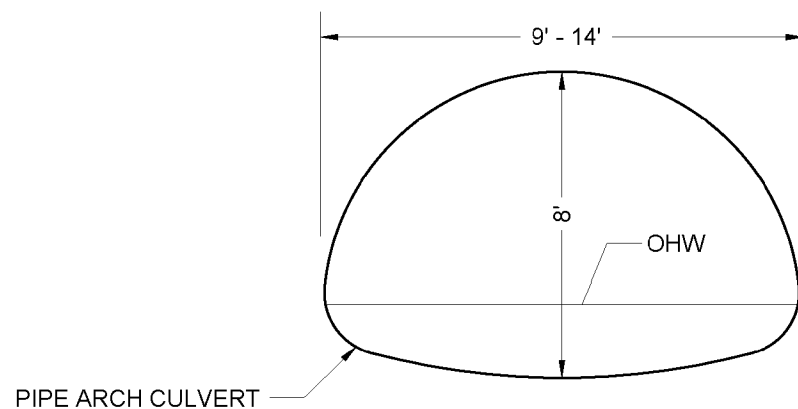
NTS



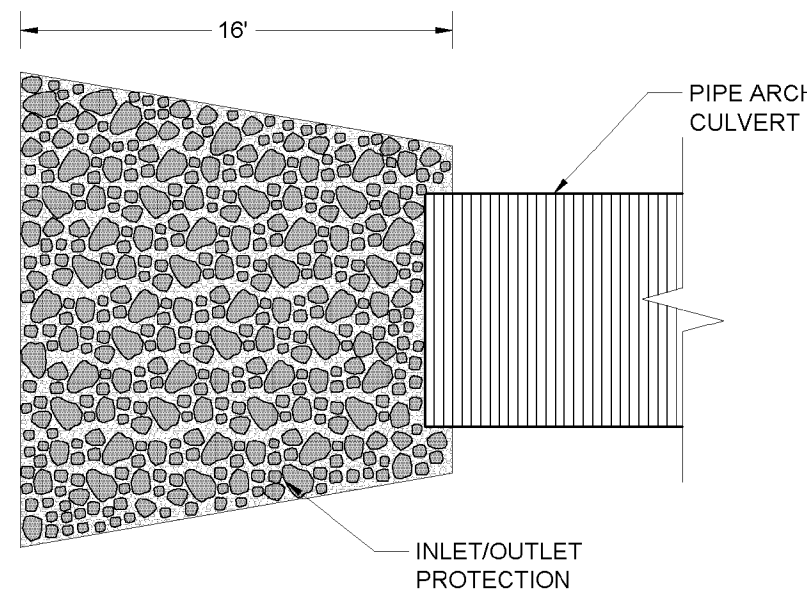
**TYPICAL PROFILE**

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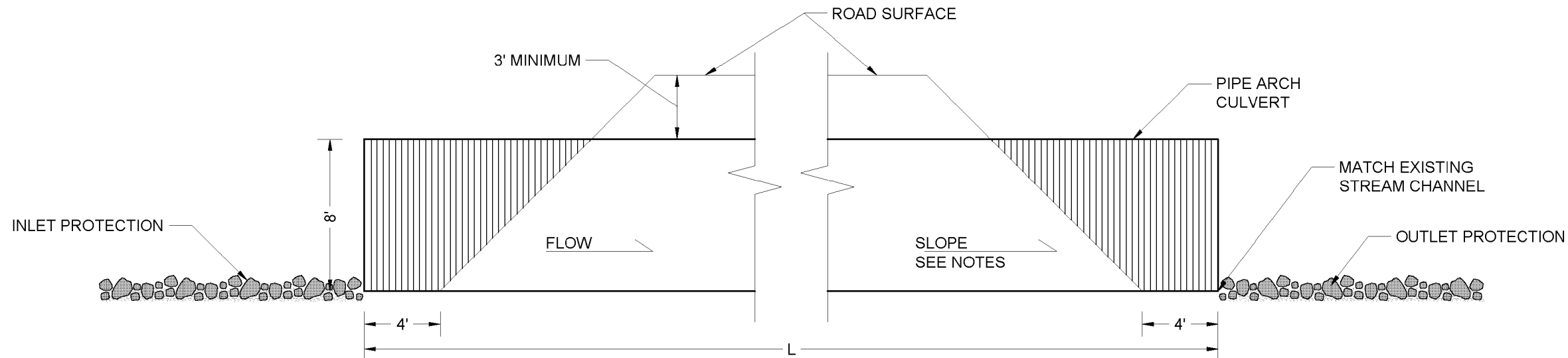
<b>PEBBLE PROJECT</b> APPLICANT: <b>PEBBLE LIMITED PARTNERSHIP</b>		<b>DRAWING TITLE:</b> <b>CULVERT DESIGN</b> <b>CATEGORY 4</b>	
LAT., LONG. OF MINE 59°53'51.29"N 155°18'2.83"W	PROPOSED ACTIVITY: <b>MINERAL DEVELOPMENT</b>		
WATERWAY: VARIOUS	FILE NO. <b>POA-2017-271</b>	DATE: <b>JUNE 2020</b>	FIGURE NO. <b>CX-004</b>



**TYPICAL SECTION**  
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**TYPICAL INLET/OUTLET PROTECTION**  
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**TYPICAL PROFILE**  
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**NOTES:**

CATEGORY 5 CULVERTS SHALL BE INSTALLED IN MAPPED STREAMS THAT HAVE A STREAM WIDTH GREATER THAN 6' UP TO 10' AT THE ORDINARY HIGH WATER (OHW) MARK. CATEGORY 5 SHALL NOT BE USED FOR FISH PASSAGE.

CULVERTS SHALL SPAN ENTIRE TOE OF FILL WIDTH PLUS ONE HALF CULVERT DIAMETER BEYOND TOE OF FILL.

CULVERT SHALL BE PIPE ARCH THAT IS 8' TALL BY 9' - 14' WIDE.

STREAM IMPACT AREA EQUALS STREAM WIDTH TIMES CULVERT LENGTH.

STREAM BED SLOPE THROUGH CULVERT SHALL MATCH CHANNEL BED SLOPE TO MAXIMUM EXTENT PRACTICABLE.

FILL DEPTH WILL BE DETERMINED BASED ON EQUIPMENT LOADING AND CMP DESIGN.

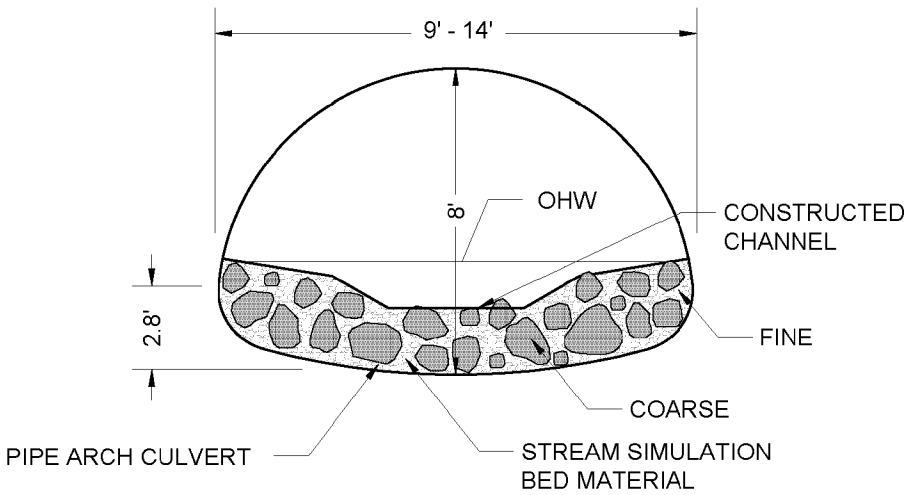
FINAL DESIGN OF FISH PASSAGE CULVERTS WILL BE IN ACCORDANCE WITH USFWS GUIDELINES – CULVERT DESIGN GUIDELINES FOR ECOLOGICAL FUNCTION, USFWS ALASKA FISH PASSGE PROGRAM REVISION 5 (FEB 5, 2020).

<div>PEBBLE PROJECT</div> <div>APPLICANT: PEBBLE LIMITED PARTNERSHIP</div>		<div>DRAWING TITLE:</div> <div>CULVERT DESIGN</div> <div>CATEGORY 5</div>	
<div>LAT., LONG. OF MINE</div> <div>59°53'51.29"N 155°18'2.83"W</div>	<div>PROPOSED ACTIVITY:</div> <div>MINERAL DEVELOPMENT</div>		
<div>WATERWAY:</div> <div>VARIOUS</div>	<div>FILE NO.</div> <div>POA-2017-271</div>	<div>DATE:</div> <div>JUNE 2020</div>	<div>FIGURE NO.</div> <div>CX-005</div>

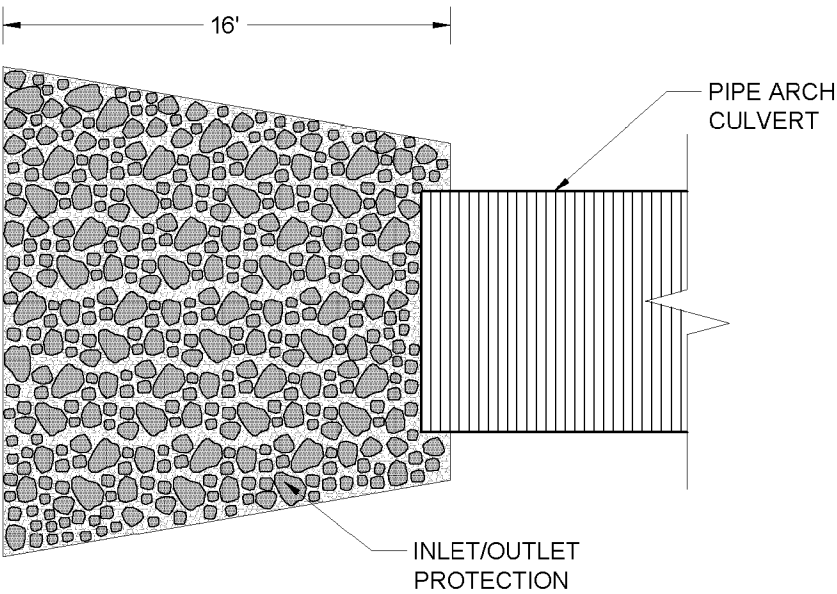
NOTES:

CATEGORY 6 CULVERTS SHALL BE INSTALLED IN MAPPED STREAMS WHERE FISH PASSAGE IS REQUIRED AND THAT HAVE A STREAM WIDTH GREATER THAN 6' UP TO 10' AT THE ORDINARY HIGH WATER (OHW) MARK.

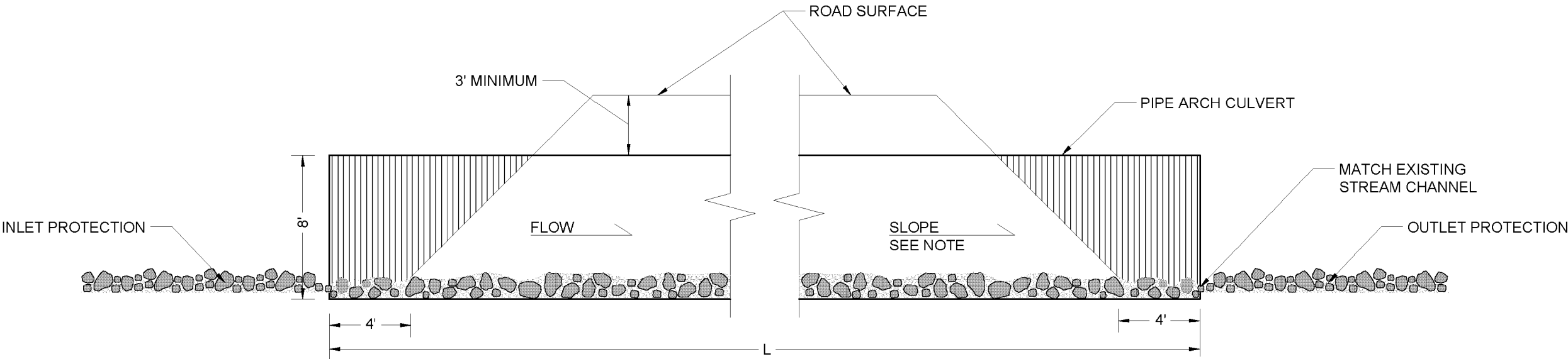
FINAL DESIGN OF FISH PASSAGE CULVERTS WILL BE IN ACCORDANCE WITH USFWS GUIDELINES – CULVERT DESIGN GUIDELINES FOR ECOLOGICAL FUNCTION, USFWS ALASKA FISH PASSGE PROGRAM REVISION 5 (FEB 5, 2020).



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TYPICAL INLET/OUTLET PROTECTION  
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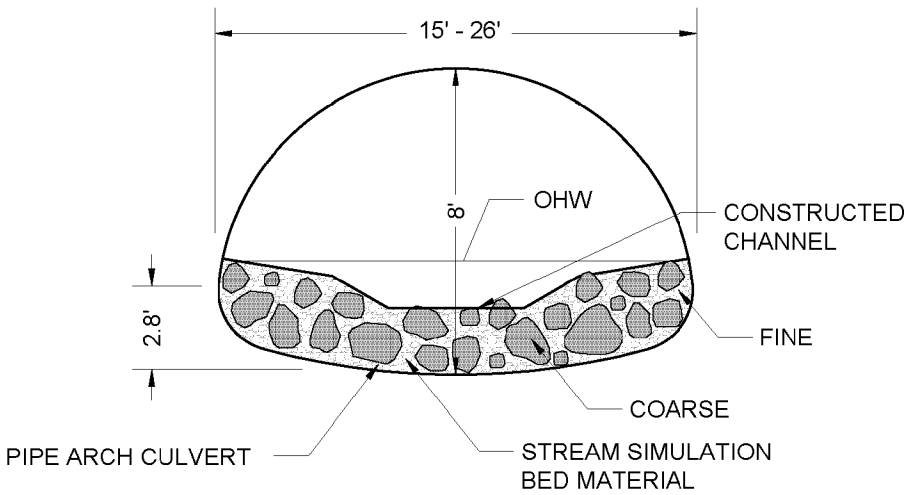
TYPICAL PROFILE  
NTS

PEBBLE PROJECT		DRAWING TITLE:  CULVERT DESIGN CATEGORY 6	
APPLICANT: PEBBLE LIMITED PARTNERSHIP			
LAT., LONG. OF MINE 59°53'51.29"N 155°18'2.83"W	PROPOSED ACTIVITY: MINERAL DEVELOPMENT	DATE:  JUNE 2020	
WATERWAY: VARIOUS	FILE NO. POA-2017-271		
		FIGURE NO.  CX-006	

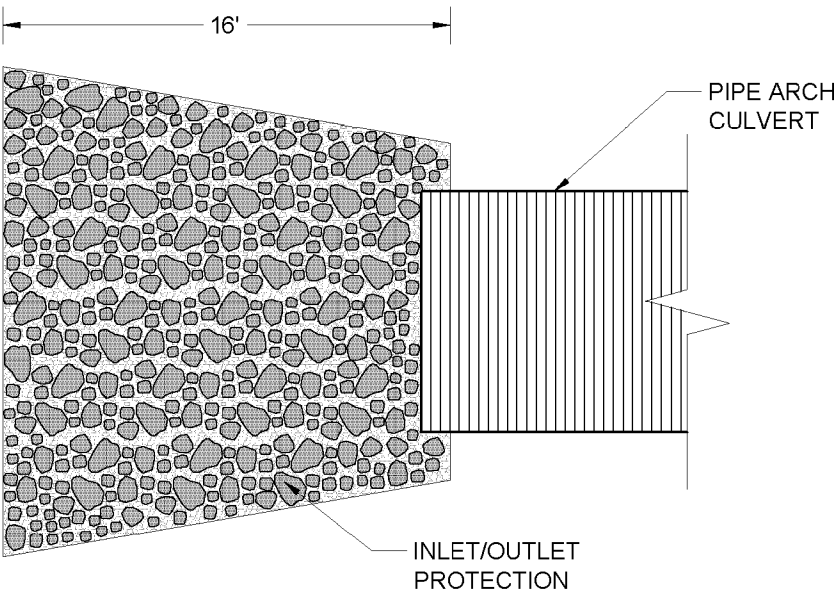
NOTES:

CATEGORY 7 CULVERTS SHALL BE INSTALLED IN MAPPED STREAMS WHERE FISH PASSAGE IS REQUIRED AND THAT HAVE A STREAM WIDTH GREATER 10' AT THE ORDINARY HIGH WATER (OHW) MARK.

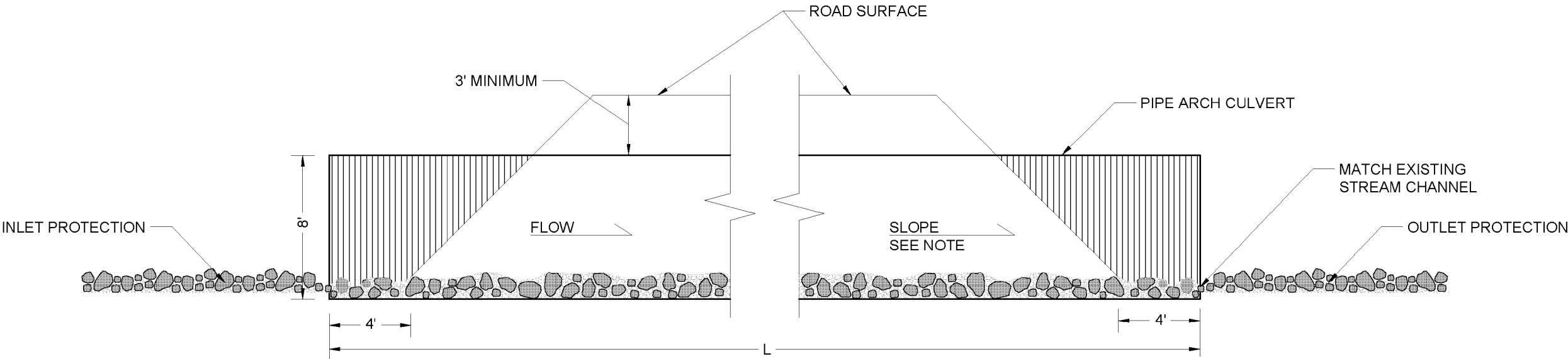
FINAL DESIGN OF FISH PASSAGE CULVERTS WILL BE IN ACCORDANCE WITH USFWS GUIDELINES – CULVERT DESIGN GUIDELINES FOR ECOLOGICAL FUNCTION, USFWS ALASKA FISH PASSGE PROGRAM REVISION 5 (FEB 5, 2020).



**TYPICAL SECTION**  
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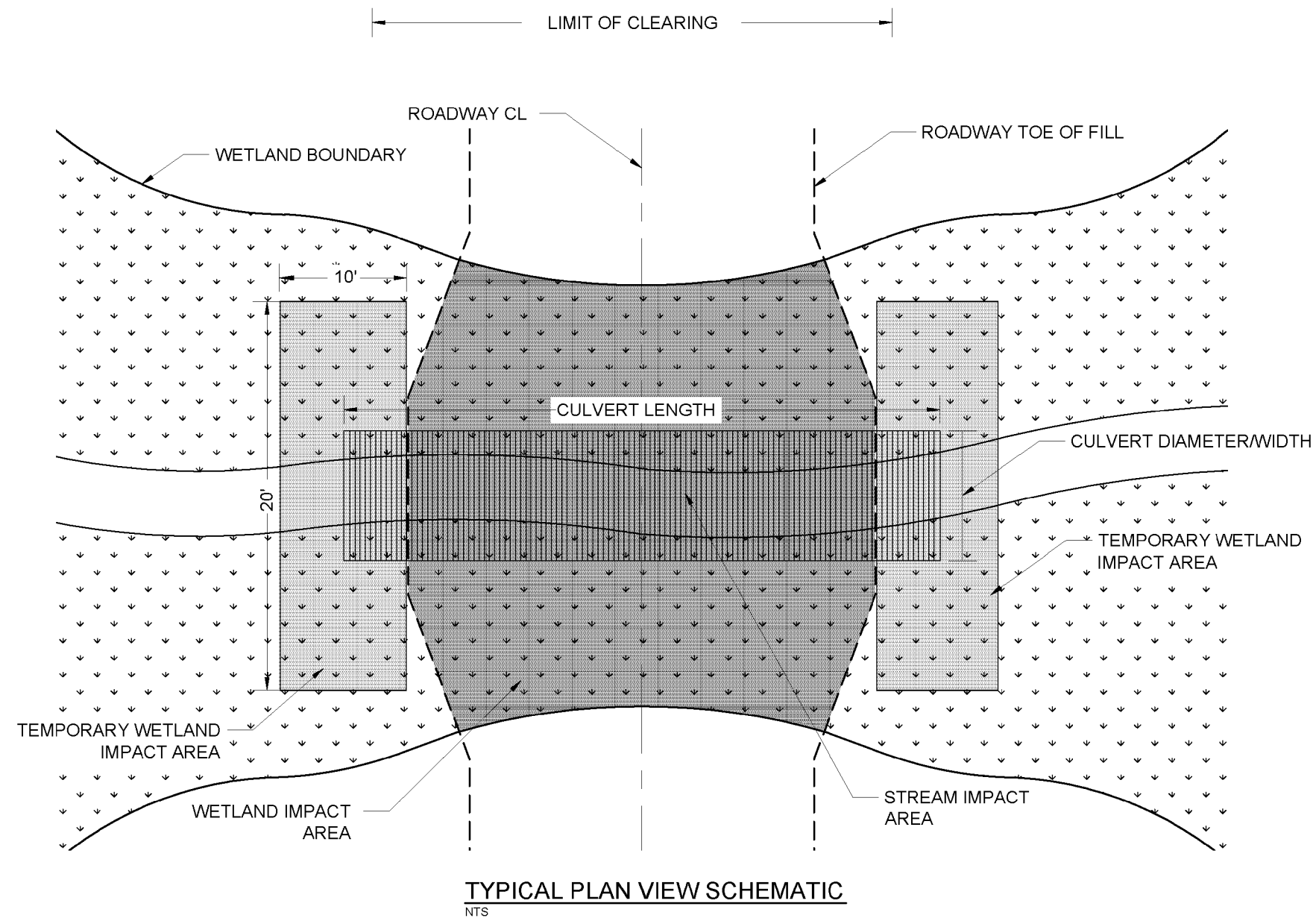
**TYPICAL INLET/OUTLET PROTECTION**  
NTS



**TYPICAL PROFILE**  
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PEBBLE PROJECT	
APPLICANT: PEBBLE LIMITED PARTNERSHIP	
LAT., LONG. OF MINE 59°53'51.29"N 155°18'2.83"W	PROPOSED ACTIVITY: MINERAL DEVELOPMENT
WATERWAY: VARIOUS	FILE NO. POA-2017-271

DRAWING TITLE: CULVERT DESIGN CATEGORY 7	
DATE: JUNE 2020	FIGURE NO. CX-007



NOTES:

FINAL DESIGN OF FISH PASSAGE CULVERTS WILL BE IN ACCORDANCE WITH USFWS GUIDELINES – CULVERT DESIGN GUIDELINES FOR ECOLOGICAL FUNCTION, USFWS ALASKA FISH PASSGE PROGRAM REVISION 5 (FEB 5, 2020).

SPOIL TO BE STORED OUT OF STREAM CHANNEL AND ADJACENT WETLANDS AND WITHIN THE CONSTRUCTION ROW.

MAINTAIN STREAMFLOW THROUGHOUT CROSSING CONSTRUCTION.

CLEARING LIMITS A MAXIMUM OF 10 FEET BEYOND TOE OF FILL.

<b>PEBBLE PROJECT</b> APPLICANT: <b>PEBBLE LIMITED PARTNERSHIP</b>		DRAWING TITLE: <b>CULVERT DESIGN CATEGORY 2-7 PLAN SCHEMATIC</b>	
LAT., LONG. OF MINE 59°53'51.29"N 155°18'2.83"W	PROPOSED ACTIVITY: <b>MINERAL DEVELOPMENT</b>		
WATERWAYS: VARIOUS	FILE NO. <b>POA-2017-271</b>	DATE: <b>JUNE 2020</b>	FIGURE NO. <b>CX-008</b>